LOWER HUDSON RIVER BASIN

HILLVIEW RESERVOIR
WESTCHESTER COUNTY
NEW YORK
INVENTORY Nº 187

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

DACW51-78-C-0035

NEW YORK DISTRICT CORPS OF ENGINEERS

JULY 1978

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

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Hillview Reservoir
Long Island Basin, Westchester Co., N.Y.
Inventory No. N.Y. 187

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National Dam Safety Program

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(10) **John B. Stetson**

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Dale Engineering Company
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Dam Safety
National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability
Hillview Reservoir
Westchester County
City of New York
Water Supply System

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

Hillview Reservoir Dam was judged to be safe.

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PHASE I REPORT
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Name of Dam Hillview Reservoir - NY137

State Located	New York
County Located	Westchester
Stream	None
Date of Inspection	June 23, 1978

ASSESSMENT OF GENERAL CONDITIONS

The Hillview Reservoir appears to be adequate for normal reservoir operation. No off-site drainage enters the reservoir which is perched above the surrounding terrain. The reservoir slopes and embankments are in generally excellent condition. A full-time maintenance force at the facility exercises continued surveillance on the facility. The physical examination disclosed no defects that require attention. No remedial measures are recommended at this time.

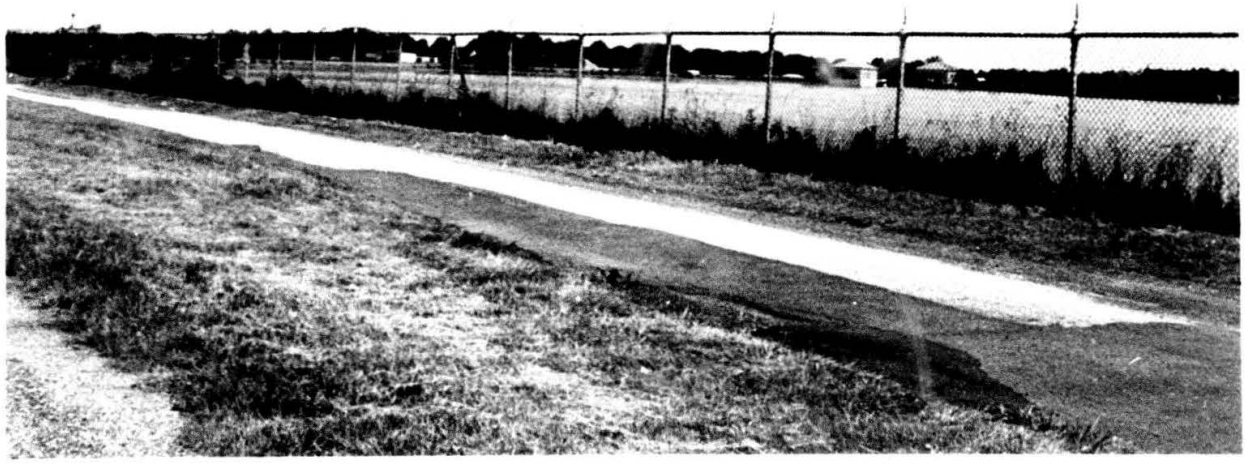
Dale Engineering Company

John B. Stetson, President

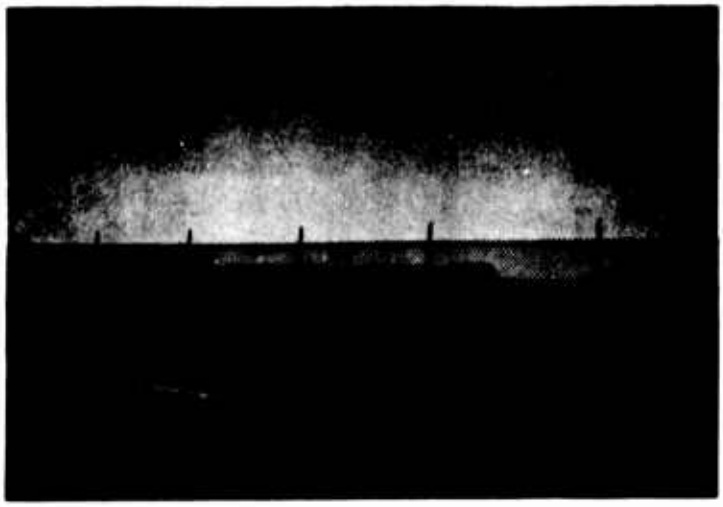
STATE OF NEW YORK
DALE ENGINEERING COMPANY, INCORPORATED
LICENSED PROFESSIONAL ENGINEER
NO. 076

Approved By:
Date: 28 July 78

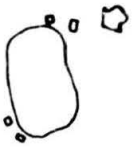
Col. Clark H. Benn
New York District Engineer



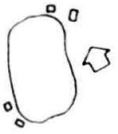
1. View of reservoir looking past downtake #1.



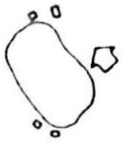
2. View looking towards intake #1 across reservoir in left area of picture. Submerged dividing wall connects with this structure.



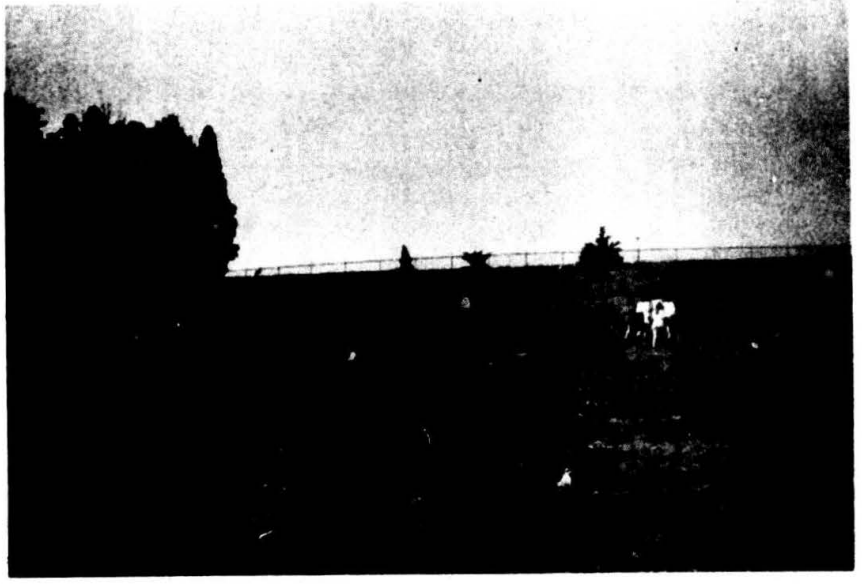
3. View of embankment from northeast end of reservoir property.

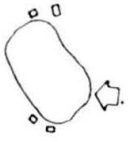


4. Another view looking west along property access road.



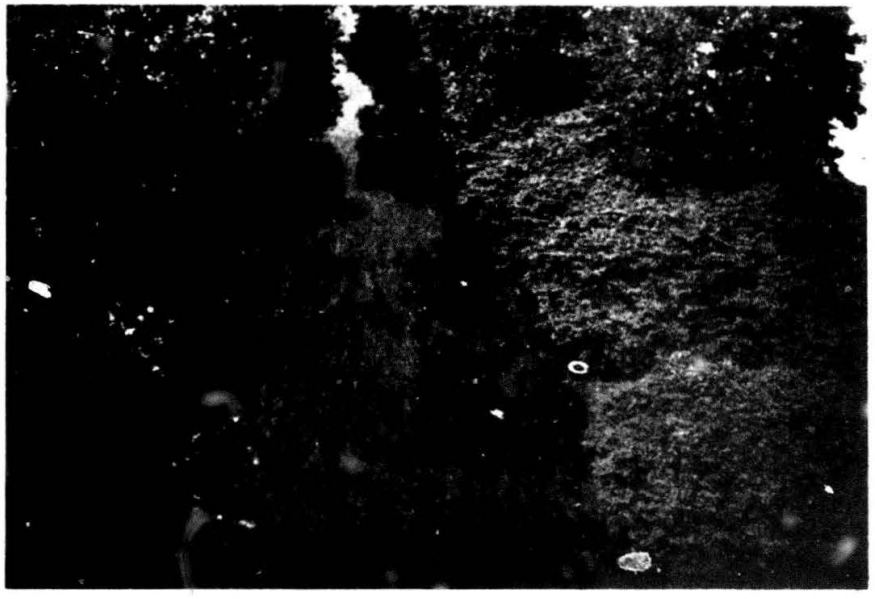
5. Detail of local drainage works along access road at toe of embankment.





6. View of reservoir embankment from southeast end of reservoir property.

7. View of Wakefield Street outfall into Bronx River. No discharge at time of inspection.



8. View of Bronx River from bridge.

9. View of top of embankment looking west near southeast end of reservoir.

10. View of Wakefield Street area east of reservoir.

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
NAME OF DAM - HILLVIEW ID# - NY187

SECTION 1 - PROJECT INFORMATION

1.1 General

a. Authority

Authority for this report is provided by the National Dam Inspection Act, Public Law 92-367 of 1972. It has been prepared in accordance with a contract for professional services between Dale Engineering Company and The New York State Department of Environmental Conservation.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the structural and hydraulic condition of the Hillview Reservoir and appurtenant structures, and to determine if the dam constitutes a hazard to human life or property and to transmit findings to the State of New York.

This Phase I inspection report does not relieve an Owner or Operator of a dam of the legal duties, obligations or liabilities associated with the ownership or operation of the dam. In addition, due to the limited scope of services for these Phase I investigations, the investigators had to rely upon the data furnished to them. Therefore, this investigation is limited to visual inspection, review of data prepared by others, and simplified hydraulic and structural stability evaluations where appropriate. The investigators do not assume responsibility for defects or deficiencies in the dam or in the data provided.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

Hillview Reservoir is a compacted earth fill embankment varying in height up to 90 feet which covers the entire perimeter of the reservoir. The length of the embankment is approximately 1.7 miles. The reservoir is divided into two approximately equal cells by a dividing wall which extends from the south downtake to the north uptake structure. The construction of this dividing wall is similar to that of the normal embankment. The dividing wall also contains the Catskill bypass tunnel. The Catskill bypass tunnel and the Delaware bypass which runs under the reservoir permits delivery from either system into the city's distribution tunnels without passing through the reservoir. The impoundment side of the embankment is composed of various materials. In general, the riprap is located at the water line. Below the water line a band of dry

rubble has been placed. Typical sections indicate concrete lining at elevations below that of the dry rubble. See details in this report. The downstream slopes of the embankment are generally grassed with trees growing in skattered areas throughout the perimeter. The top width of the embankment varies from 40 feet to 80 feet in some areas. Reservoir is fed by the Water Bureau water aqueducts and similarly discharged into the aqueducts feeding the New York City Water Supply System. No off-site drainage can enter this facility. An 18 foot long overflow weir is located near the southeast corner of the impoundment. This weir discharges into the Wakefield Avenue storm sewer and conducts overflow to the Bronx River. See photographs of Bronx River outlet.

b. Location

Hillview Reservoir is located in the City of Yonkers, Westchester County, New York. The reservoir is located immediately south of the Yonkers Raceway and to the east of the New York State Thruway.

c. Size Classification

The maximum height of the dam is approximately 90 feet. The storage capacity is estimated as 2,843 acre feet. Therefore, the dam is in the intermediate size category as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classification

The Hillview Reservoir is located in the center of a heavily developed residential area in the City of Yonkers. Flood discharges from this facility could cause major damage and loss of life in the surrounding community, therefore, the dam is in the high hazard category as defined by the Recommended Guidelines for Safety Inspection of Dams

e. Ownership

The dam is owned by the Bureau of Water Supply of the City of New York.

f. Purpose of Dam

The dam is used as a receiving reservoir for water supply purposes for the City of New York.

g. Design and Construction History

Construction of the Hillview Reservoir commenced sometime prior to 1912. Historical accounts indicate that the concrete floor of the reservoir was completed in 1912. By the end of 1914, the embankments of Hillview Reservoir were complete.

h. Normal Operational Procedures

No specific relevant operating information has been given. There is an operating staff on the site 24 hours a day. The facility is continually maintained. Drainage of the reservoir is by gravity into City Tunnels #1 and #2.

1.3 PERTINENT DATA

a. Drainage Area

The drainage area of the reservoir is approximately 100 acres. Perimeter of the reservoir is 1.7 miles.

b. Discharge at Dam Site

Discharges at the overflow weir are related to operations of the Delaware and Catskill Aqueducts rather than by rainfall events. There have been no reported historical operating conditions which have endangered the condition of the reservoir or caused overtopping of the embankment. Inflows to the reservoir are controlled by staff personnel stationed at the reservoir and by other personnel at control points in the supply system. The primary point of control for Hillview inflow is at the Kensico Reservoir. With no flows from Kensico, during periods of average demand, 1250 MGD, the reservoir could be drawn down substantially in a day.

c. Elevation (feet above MSL)

Top of dam	300.5
Normal pool	295.0

d. Reservoir

Length of normal pool	3450 feet

e. Storage

Normal pool	2843.59 acre feet 929,000,000 gallons

f. Reservoir Surface

Normal pool	89.0 acres

g. Dam

Type - Compacted earth fill.
Length - 1.7 miles in circumference perched above existing terrain.

Height - Varies up to 90 feet (see plans).
Freeboard between normal reservoir and top of dam - 5.5 feet.
Top width - Varies 40 to 180 feet.
Side Slopes - Varies. Estimate 2 horizontal to 1 vertical to 10 horizontal to 1 vertical.
Zoning - None reported.
Impervious core - None reported.
Grout curtain - None reported.

SECTION 2 - VISUAL INSPECTION

2.1 SUMMARY

a. General

The visual inspection of Hill View Reservoir in Westchester County, part of the New York City water supply, took place on June 23, 1978. The reservoir has undergone a program of continued maintenance over the years and is maintained by a full time staff. Atop the reservoir embankment, a large number of steel casings were being stored for the construction of tunnel #3 work. The project is currently on hold with only maintenance type construction activities in progress. This reservoir is perched above the existing terrain and has virtually no additional runoff above the reservoir pool other than off the embankment. The reservoir is an equalization basin for the Delaware and Catskill Aqueducts and is the head of City water supply tunnels #1 and #2. In periods where the aqueduct is meeting demand, access flows are routed into the reservoirs. The aqueduct discharge is monitored by meters below Hill View and controlled by way of continued communication between Hill View and Kensico.

b. Dam

The reservoir visually conforms to the plans as provided in this report. The reservoir embankment encircles the impoundment a distance of approximately 1.7 miles. The reservoir is enclosed within a fence which has a path around the outside. The area inside the fence was inspected around the impoundment. No signs of erosion or sloughing were noted. The riprap which lines the entire reservoir face is generally in good condition. Only one problem area was noted relative to the condition of the riprap; this sloughed area was a test hole area for the foundation of a lighting security system the City was considering in the late 1960's to prevent vandalism at the reservoir site. The top of the embankment showed no signs of cracking or misalignment. The exterior face of the embankment was generally well cared for and showed no signs of seepage, cracking or sloughing. The toe was inspected along city streets and service roads and shows no signs of seepage or movement.

c. Appurtenant Structures

Only the overflow weir was inspected in downtake #2. All intake and downtake systems were reported to be in service. The only historical incident requiring significant repairs, which occurred about 18 years ago, involved a distribution tunnel from downtake #1 to downtake #2. The downtake structures are a few hundred feet apart and the tunnel section was reported to be leaking. The tunnel was dewatered and repaired. Subsequent to the repairs, the tunnel continued to leak. Drains were then installed in the embankments along the tunnel to relieve the seepage. No seepage and leakage problems have been noticed subsequent to that repair work.

d. Downstream Channel

Overflow from the reservoir goes into the Wakefield Street storm sewer. The gravity storm sewer also services lateral streets of Yonkers for a distance of six blocks from the edge of the reservoir property to the outfall at the Bronx River. The outfall was viewed from an overhead bridge and was in good condition. There was no discharge from the outfall at the time of inspection. The downstream section of the Bronx River viewed for a several hundred yards was noted to be clear and unobstructed at the time of inspection.

SECTION 3 - HYDROLOGY AND HYDRAULICS

3.1 EVALUATION OF FEATURES

a. Experience Data

The reservoir is a water supply holding area perched above the surrouding terrain and has only the impoundments interior embankment for runoff, the area of which is only minor. Based on information given by the operations staff, there will be more than sufficient operations freeboard with the reservoir to store a PMP rainfall of approximately 25-30 inches without overtopping the embankment. The only way the reservoir would be overtopped would be by operator error on the aqueduct supply end of the system. Since the reservoir is continually staffed with the reservoir level in continual observation, and with the aqueduct operators in continued radio contact, this possibility seems remote and beyond the scope of this investigation.

SECTION 4 - STRUCTURAL STABILITY

4.1 Evaluation of Structural Stability

a. Visual Observations

The reservoir embankment for the entire perimeter is in good condition, with no sign of structurally significant movement, cracking or erosion. No indication of seepage through or below embankments was observed. The reservoir embankment slopes are lined with riprap in the vicinity of present water level elevations, and provided with grasses and low vegetation on the upper most, above-water-level areas. The side slopes of outside embankments ("downstream" slopes) are grassed with trees of varying density. Embankment sections are wide in cross-sections; the widths at the top of embankment being adequate to provide a relatively spacious perimeter service road around the fenced in reservoir. In general, side slopes are well maintained (riprap and vegetation), the exception being some areas of reservoir banks along the northerly and easterly sides where low foliage has been permitted to reach a dense condition. A very limited section of reservoir embankment has sloughed/settled at a location where a test excavation for a proposed lighting pole installation had been made some years ago. Some limited concrete deterioration has occurred in headwalls of the uptake structures located near the reservoirs northerly end.

b. Geology and Seismic Stability

Excavation for the reservoir was made in glacial till. Bedrock beneath the till is Yonkers Granite Gneiss except at the southeastern end of the reservoir where Fordham Gneiss is present beneath the drift. Depth of till to bedrock is unknown. However, records indicate that the glacial till deposit was found to be extensive and deep enough to accommodate the reservoir without material rock excavation. The literature indicates the rock floor to be "sound". Generally the Yonkers Granite Gneiss and the Fordham Gneiss are not subject to "rotting" except along shear zones.

No fault zones are known in the immediate vicinity of the reservoir. One shear zone, known as the Bryn Mawr fault is located about 2.3 miles northeasterly of the reservoir. This fault was encountered during construction of the Catskill aqueduct and is not shown on the 1971 New York State Geologic Map. From the topography and geology its probable trend is northwesterly. Another fault found about 2 miles southwesterly of the reservoir is shown on the 1971 New York State Geologic Map; its trend is northwest. A large fault, trending northeast, is located about 3 miles east of the reservoir.

Earthquakes have occurred and been felt in the area of the reservoir. One took place in the area of the fault southwest of the

reservoir in 1926. Its rated intensity was V on the Modified Mercalli scale. In the area of the fault to the east, two earthquakes are on record (1872, M.M.-IV and in 1874 M.M.-V. Although this area is designated as being in Zone 1 of the Seismic Probability Map, the New York State Geological Survey believes this area of Westchester County should be upgraded to at least a Zone 2 with possibility of Zone 3 potential.

c. Data Review and Stability Evaluation

Design drawings indicate embankment construction consists of a "special impervious" inner section (reservoir side) and an outer section of "ordinary embankment". A benched inside surface, with a slope of 2 horizontal on 1 vertical or flatter, is specified. Information on earth material actually utilized, and the method of placement and compaction, is not provided. The width of the upper embankment sections is variable but design cross sections indicate widths which exceed 100 feet at reservoir water surface elevations. Correlation of geologic data implies that embankment construction utilizing reservoir area excavation consists of glacial till soil. Glacial till extending through the range of soil particle sizes consisting of gravel, sand, silt and clay can be compacted to a dense and relatively impervious condition, and may constitute the "special impervious" inner section of embankment referred to.

At present, the constructed embankments are in good condition with no indication of structural distress or deterioration from past loading conditions, including the effects of at least one past moderate area earthquake. This site is in an area having a seismic zone rating of 1, (with a suggested upgrading to zone 2) and convention assumes no earthquake hazard for such a rating(s). Experiences known to the engineering profession indicate that rolled earth embankments which include soils possessing some cohesion and which are located on a foundation of firm earth retain their stability when subject to the effects of moderate earthquake forces. The wide embankment design utilized for this reservoir is felt to be more conservative than has been typical for similar structures built in the past. It is anticipated that, properly maintained, this reservoir will continue to serve satisfactorily for future loading conditions which are similar to those of the past.

SECTION 5 - ASSESSMENT/REMEDIAL MEASURES

5.1 DAM ASSESSMENT

On the basis of the Phase I visual examination, the earth embankmment of Hillview Reservoir appears to be adequate for normal reservoir operation. The reservoir slopes and embankment are in generally excellent condition. A full-time maintenance force at the facility exercises continued surviellence on the facility. The physical examination disclosed no defects that require attention at this time.

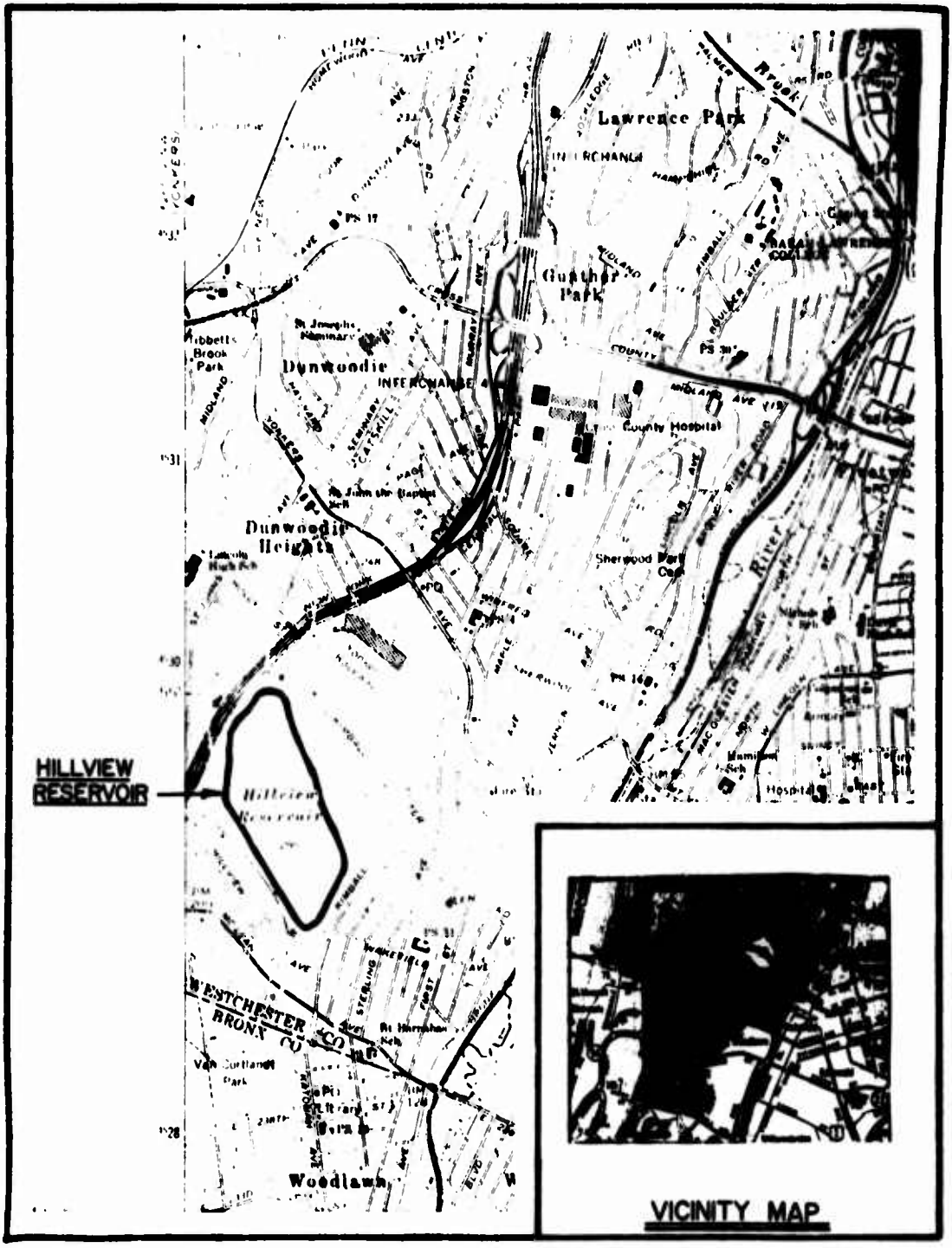
5.2 REMEDIAL MEASURES

a. Alternatives

No remedial measures are recommended at this time.

b. Operation and Maintenance

No specific relevant operating information has been given. There is an operating staff on the site 24 hours a day. The facility is continually maintained. Drainage of the reservoir is by gravity into City Tunnels #1 and #2.



LOCATION PLAN

FIGURE 1

FIGURE 2

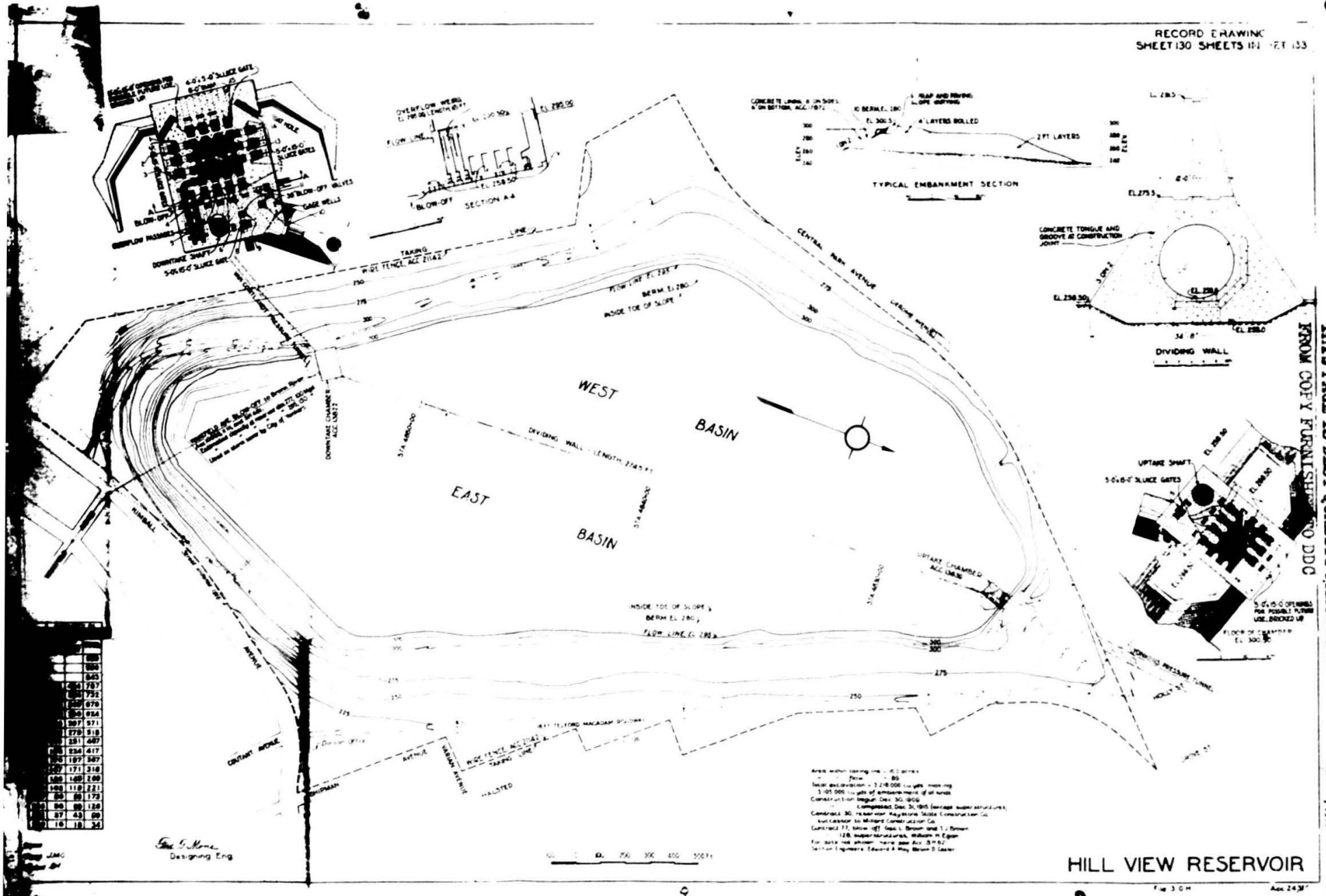


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FIGURE 3

FIGURE 4

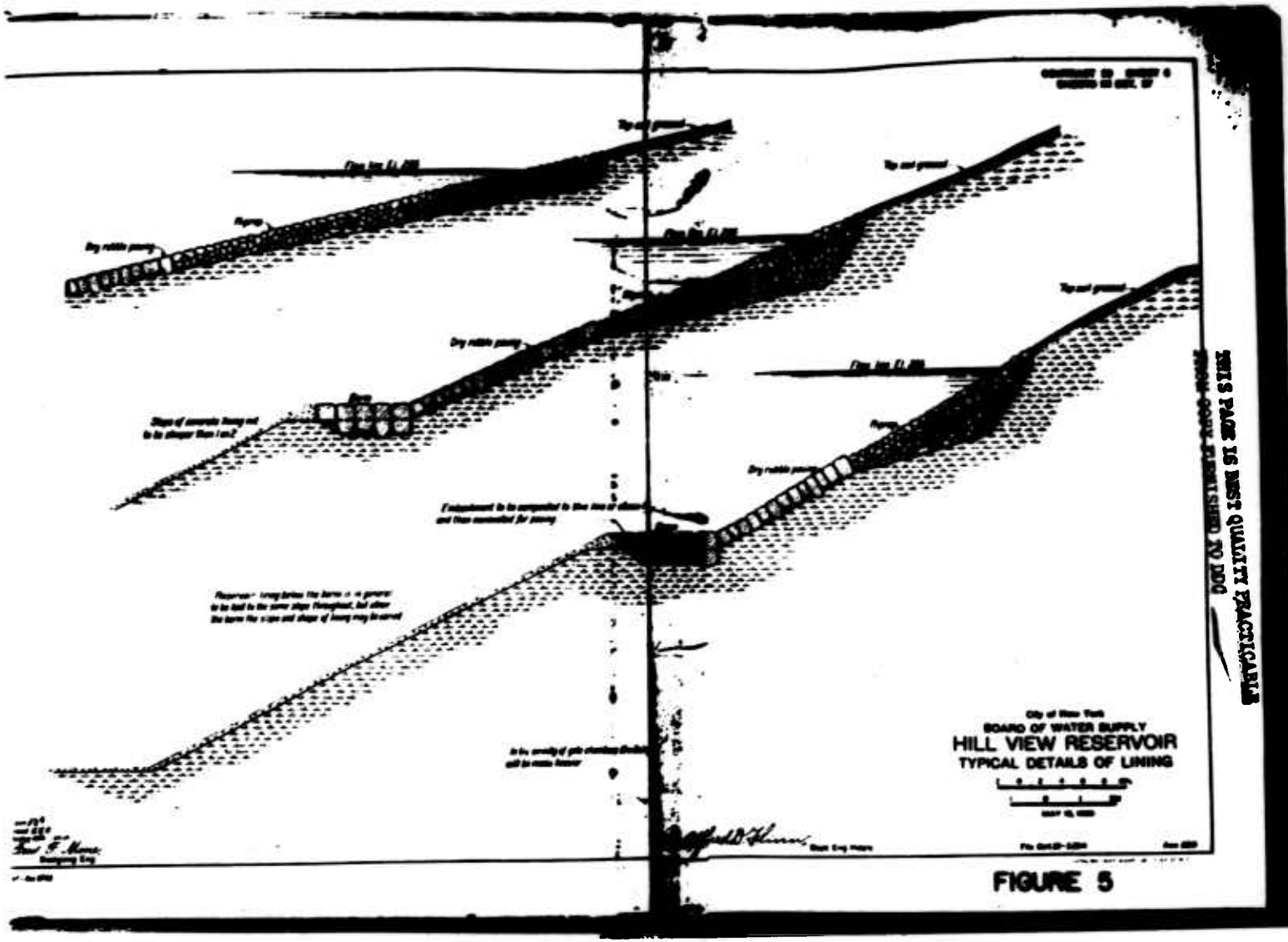


FIGURE 5

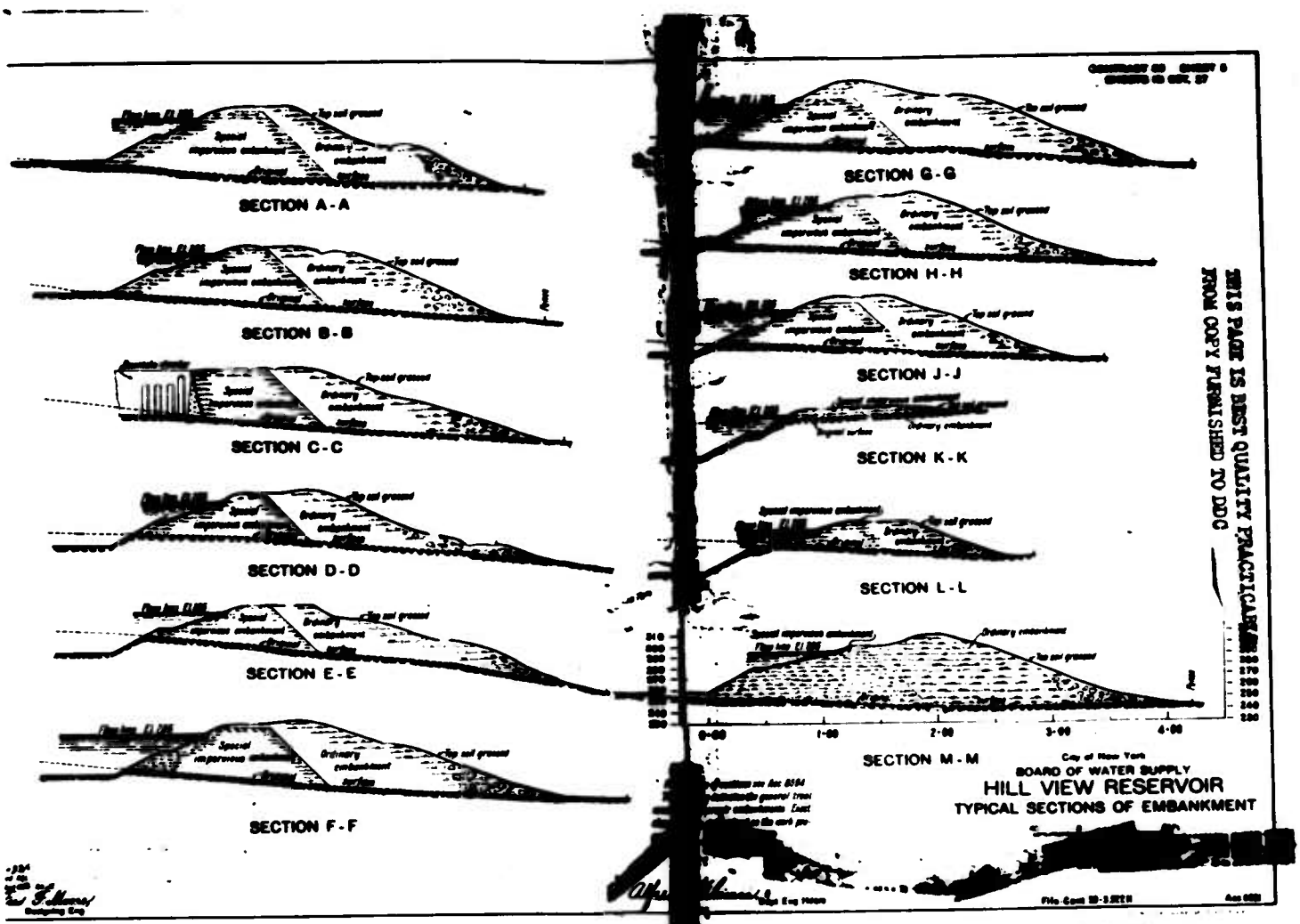


FIGURE 6

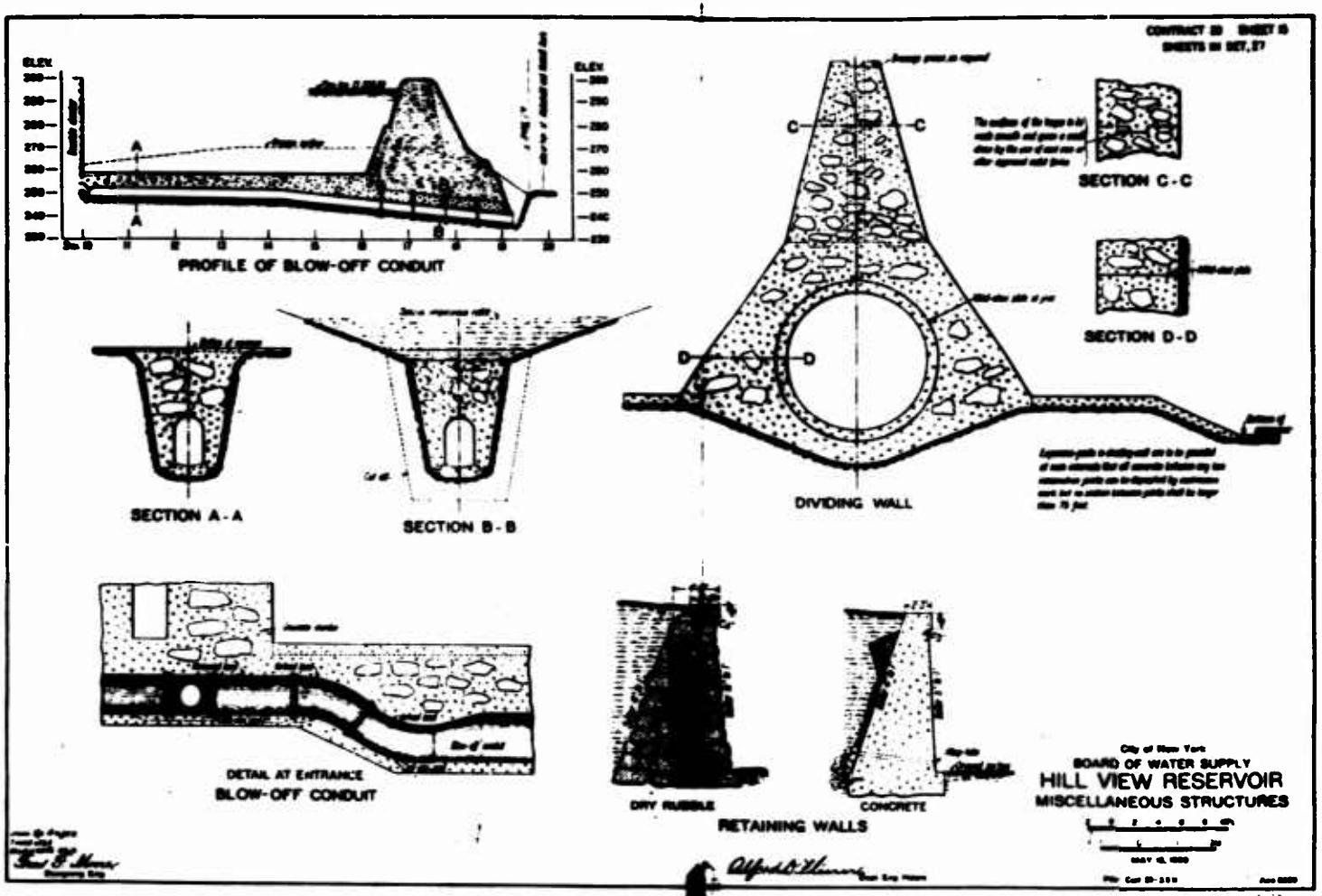
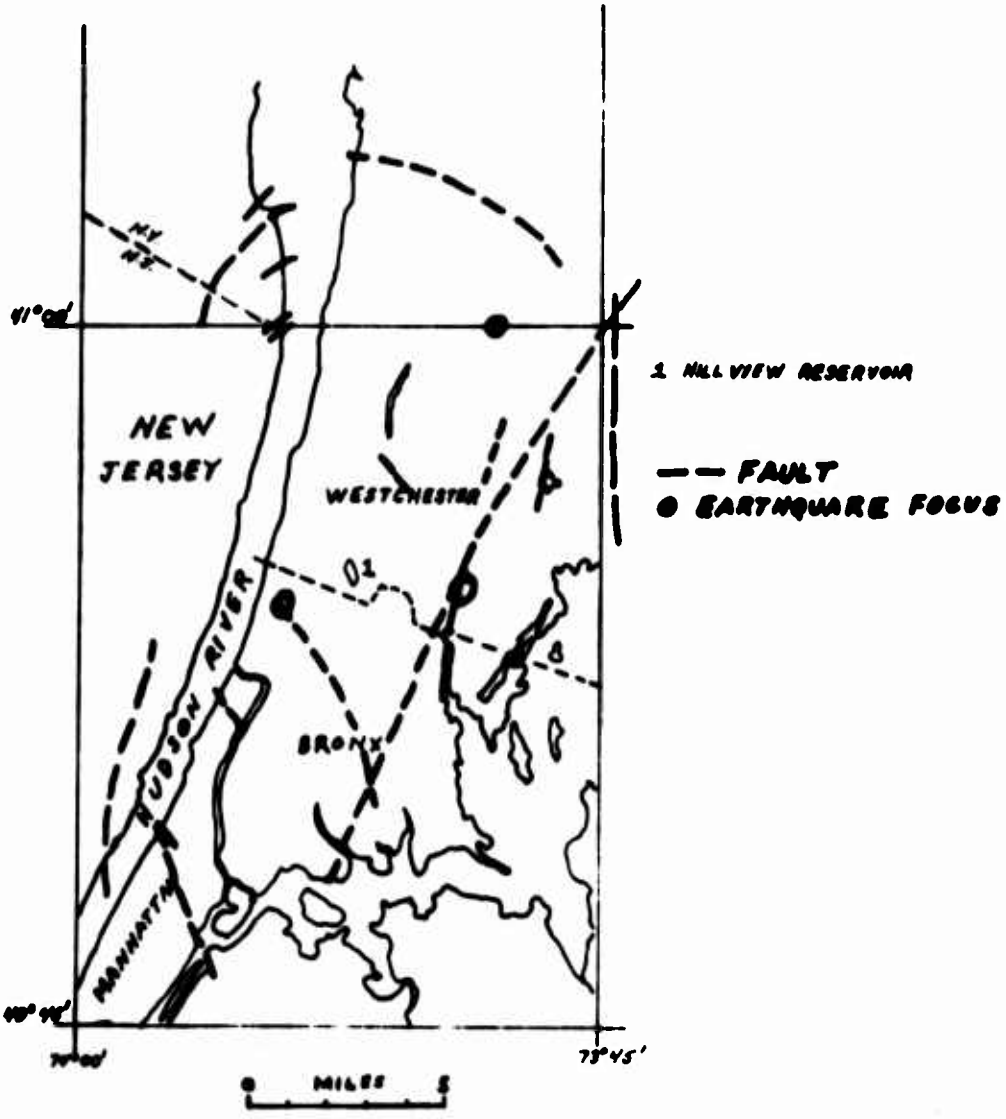


FIGURE 7



GEOLOGIC MAP
FIGURE 8

APPENDIX A

FIELD INSPECTION REPORT

CHECK LIST
VISUAL INSPECTION

PHASE 1

Name Dam Hill View Reservoir County Westchester State New York ID # 187

Type of Dam Earthen Reservoir Hazard Category 1

Date(s) Inspection June 23, 1978 Weather Partly Cloudy Temperature 70°

Pool Elevation at Time of Inspection 292.90 M.S.L. Tailwater at Time of Inspection _____

Inspection Personnel:

N. F. Dunlevy	Dale Engineering Company	
D. McCarthey	Dale Engineering Company	
F.W. Byszewski	Dale Engineering Company	
Wm. Means, N.Y.C. Bureau of Water Supply, Bronx Borough Engineer		

N. F. Dunlevy Recorder

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
ANY NOTICEABLE SEEPAGE	N/A	
STRUCTURE TO ABUTMENT/EMBANKMENT JUNCTIONS	N/A	
DRAINS	N/A	
WATER PASSAGES	N/A	
FOUNDATION	N/A	

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS CONCRETE SURFACES	N/A	
STRUCTURAL CRACKING	N/A	
VERTICAL & HORIZONTAL ALIGNMENT	N/A	
MONOLITH JOINTS	N/A	
CONSTRUCTION JOINTS	N/A	
STAFF GAGE OF RECORDER	N/A	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	None observed.	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None observed.	Reservoir is perched on hill top downstream to visually inspect completely around from automobile and on foot.
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	None observed.	
VERTICAL AND HORIZONTAL ALINEMENT OF THE CREST	Good	
RIPRAP FAILURES	Generally riprap in excellent condition. One minor settlement area.	Entire 1.7 mile face of embankment riprapped. Inspected on foot. Settled are was discussed and found to be location test hole for lighting fixture. In late 66's City considered lighting reservoir for security.

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
EMBANKMENT COVER CROP	Embankment is almost entirely grassed. Tree growth on embankment minor.	Weed and tree growth maintenance in riprap area cleaned at time of inspection.
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Junction of embankment and abutment not applicable. No seepage observed at toe.	Reservoir perched on hilltop.
ANY NOTICEABLE SEEPAGE	None observed.	
STAFF GAGE AND RECORDER	None.	
DRAINS	No embankment drains noted or observed.	

UNGATED SPILLWAY

(FOR OVERFLOW)

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
OVERFLOW WEIR	At downtake #1 and #2 at elevation 295. Masonry weir 6 feet wide, two feet below downtake structures floor in working order.	
APPROACH CHANNEL	Intake structures #1 and #2 controlled continually, reported hourly to Kensico Reservoir which feeds reservoir. Not observable.	
DISCHARGE CHANNEL	Overflow works from downtake #2 & #2 discharge via Wakefield Street storm sewer which also pick up local streets and discharge into Bronx River. No discharge noticeable at 48" outfall pipe.	
BRIDGE AND PIERS	None.	

GATED SPILLWAY
(FOR N.Y.C. WATER SUPPLY)

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	Submerged into downtake #1 and #2. Not observed.	
APPROACH CHANNEL	Reservoir empties directly into downtake structures.	
DISCHARGE CHANNEL	Beginning of N.Y.C. tunnels #1 & #2; Tunnel #1 dewatered by City, inspected and repaired in 1975. Seep drains installed in embankment. Discharge channel not observable.	Peak 2250 MGD ADF 1250 MGD Supply approx. 90% of N.Y.C. demand.
BRIDGE AND PIERS	None.	
GATES AND OPERATION EQUIPMENT	Monitored 24 hours per day, 365 day per year with staff. Monitoring downstream done with Venturi meters.	

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	None observed.	
INTAKE STRUCTURE FOR BLOW-OFF OR DRAWDOWN.	Downtake #1 & #2. Not observable	Downtake structures previously described under ungated and gated spillways.
OUTLET STRUCTURE AT BRONX RIVER	Concrete wing wall structure with stilling basin. 48" pipe from Wakefield Street contained no flow.	Combines flows from overflow weir in downtakes #1 and #2 and/or flows from blow-off pipes.
OUTLET CHANNEL	Main stream of Bronx River was approx. 15-20 feet in width with 5-10 feet of freeboard at outlet location; looked in good condition.	
EMERGENCY GATE	Not observable.	Located in downtakes #1 & #2 to control blow-off.

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	Storm sewer not inspected. Bronx River channel clear.	Wakefield Ave. storm drain maintained by N.Y.C. Bureau.
SLOPES	Storm sewer slope is about 100 feet in 4 City blocks. Bronx River slope is slight.	
APPROXIMATE NO. OF HOMES AND POPULATION	Incorporated City of Yonkers. Yonker's Race Track. Flooding would affect a large number of homes.	

INSTRUMENTATION

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None.	
OBSERVATION WELLS	None.	
WEIRS	None.	
PIEZOMETERS	None.	
OTHER	None.	

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	None.	Reservoir is perched on hilltop.
SEDIMENTATION	Not applicable.	

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE 1

NAME OF DAM Hill View

ID # 187

ITEM	REMARKS
AS-BUILT DRAWINGS	Located N.Y.C. Bureau of Water Supply.
REGIONAL VICINITY MAP	See this report.
CONSTRUCTION HISTORY	Contact N.Y.C. Bureau of Water Supply.
TYPICAL SECTIONS OF DAM	See this report. Additional data available from N.Y.C. Bureau of Water Supply.
OUTLETS - PLAN - DETAILS - CONSTRAINTS - DISCHARGE RATINGS	See this report. Additional data available from N.Y.C. Bureau of Water Supply.
RAINFALL/RESERVOIR RECORDS	N.Y.C. Bureau of Water Supply.

ITEM	REMARKS
DESIGN REPORTS	Not available to reporter's knowledge. Limited narrative information may be available in periodicals and books.
GEOLOGY REPORTS	Limited data. See this report and N.Y.C. Bureau of Water Supply.
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	Not applicable.
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	Limited data. See N.Y.C. Bureau of Water Supply.
POST-CONSTRUCTION SURVEYS OF DAM	Limited data. See N.Y.C. Bureau of Water Supply.
BORROW SOURCES	Limited data. See N.Y.C. Bureau of Water Supply.

ITEM	REMARKS
MONITORING SYSTEMS	Manned reservoir with continuing hourly and daily records. See N.Y.C. Bureau of Water Supply.
MODIFICATIONS	Records available from N.Y.C. Bureau of Water Supply.
HIGH POOL RECORDS	Not noted specifically. Contained in general records to the recorder's knowledge.
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	See N.Y.C. Bureau of Water Supply.
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	None.
MAINTENANCE OPERATION: RECORDS	See N.Y.C. Bureau of Water Supply.

ITEM	REMARKS
SPILLWAY PLAN SECTIONS DETAILS	Closed water supply reservoir. Typical spillway arrangement non-existent. Downtake structure plans and sections shown in this report.
OPERATING EQUIPMENT PLANS & DETAILS	Limited data included in this report.

HILL VIEW RESERVOIR

CHECK LIST
HYDROLOGIC & HYDRAULIC
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: None (Water supplied by Delaware & Catskill Aqueducts)

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 295 feet

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): 295 feet

ELEVATION MAXIMUM DESIGN POOL: 308 feet

ELEVATION TOP DAM: 308-310 feet (scaled) (1.7 miles around)

CREST: Overflow weir in Gate House downtake #1 head of tunnel #1 and Gate House downtake #2 head of tunnel #1.

a. Elevation 295 feet
b. Type Masonry weir (flashboards not used)
c. Width 18 - 24 inches
d. Length 72 inches
e. Location Spillover Below Gate Houses
f. Number and Type of Gates 1 each structure (2 total)

OUTLET WORKS: (Draindown Facilities)

a. Type 24" x 48" concrete arched pipe (see Plans)
b. Location Below Gate House, reported into Wakefield St. Sewer.
c. Entrance Inverts 250 feet
d. Exit Inverts 235 feet
e. Emergency Draindown Facilities

HYDROMETEOROLOGICAL GATES:

a. Type None
b. Location None
c. Records None

MAXIMUM NON-DAMAGING DISCHARGE: Not applicable.

Inflow controlled by N.Y.C. Water Board Operations.

OTHER DATA:

a. Reservoir is an equalizing basin with capacity of 926,000,000 gallons.
b. Flows from the Catskill and Delaware Aqueducts, either bypass or flow through reservoir.
c. Average daily flow 1200 MGD, peak flow 2200 MGD.

APPENDIX B

PREVIOUS INSPECTION REPORTS

APPENDIX C

REFERENCES

APPENDIX

REFERENCES

1. Edward Wegmann: The Design and Construction of Dams, John Wiley and Sons (1918)

2. Charles H. Weidner: Water for a City - Rutgers University Press (1974)

3. The University of the State of New York - The State Education Department - State Museum and Science Service - Geological Survey: Geological Map of New York (1961)

4. James C. Duane: Report to the Aqueduct Commission 1887-1895 (1895)

5. John F. Cowan: Report to the Aqueduct Commission 1895-1907

6. Department of the Army, Office of the Chief of Engineers. National Program of Investigation of Dams; Appendix D: Recommended Guidelines for Safety Inspection of Dams, 1976

7. Linsley and Franzini: Water Resources Engineering, Second Edition, McGraw-Hill (1972)

8. Sherard, Woodward, Gizienski, Clevenger: Earth and Earth - Rock Dams, John Wiley and Sons, Inc., 1963

9. Ven Te Chow: Handbook of Applied Hydrology, McGraw-Hill, 1964